

cut through the peninsula, and the salt water from the dredging operations filled three or four holes at the edge of the mangrove swamp on the Biscayne Bay side. In one of these holes several larvæ were found, which had just hatched from the influence of the water. The species must pass the dry season in the egg state.

HABITS OF *CULEX TRICHURUS* DYAR. — As already shown, this species has a northern distribution throughout North America. The larvæ are among the earliest appearing of the early Spring species. They inhabit open grassy pools, swamps and woods pools, not in large numbers, but rather generally distributed. In April, 1905 (a backward season), we found all the largest larvæ in several collections at Chicopee, Mass., and Plattsburgh, N. Y., to be of this species. The larvæ descend easily to the bottom when disturbed where they wriggle in the mud, so that deep dipping is required to collect them. They soon seek the surface however. The larvæ are light in color, rather yellowish, and can be picked out from the other inhabitants of the pools by this character and their size without a lens.

Class I, HEXAPODA.

Order V, LEPIDOPTERA.

SOUND PRODUCED BY LEPIDOPTEROUS LARVÆ.

By HARRY FEDERLEY,

HELSINGFORS, FINLAND.

In No. 2, Vol. XII, of this Journal Professor Packard has published some observations upon sound produced by caterpillars. On Professor Packard's request for information regarding this question the editor has appended some. As I have been occupied during the last few years with the rearing of lepidopterous larvæ and have also made some observations regarding the production of sound by these creatures, I beg to herewith communicate the same.

The larva of the North American Saturnian moth *Telea polyphemus* can, in the third and fourth stages, by rubbing the powerfully constructed mandibles against each other produce a tolerably loud, tapping sound, which is audible at the distance of several meters. That here is question of a means of intimidation is not to be doubted, for

if the larva is left in peace it keeps perfectly quiet, but when the larva-cage is touched, or the larvæ are taken out, they make this peculiar tapping sound, resembling the ticking of a watch. In the fifth stage, singularly enough, the larvæ could not be made to tap, but this might possibly have been due to unfavorable climatic conditions.

The Finnish species of the genus *Drepana*, namely, *curvatula*, *lacertinaria* and *falcataria*, produce, like the *Drepana arcuata*, by rubbing the anal segment against the surface of the leaf, a peculiar scraping (rasping) sound. This sound, which is also tolerably loud, arises from the friction of two small chitinous teeth against the leaf. The chitin formations in question, which are somewhat dissimilar in the different species, are evidently rudiments of the vanished anal legs, which the adjacent hairs clearly indicate, as they occupy the same position round the chitin hooks as round the anal legs in the allied forms.

The *Dicranura* as well as the *Cerura* species, make, when disturbed, a loud scraping sound by swinging the foremost part of the body from one side to the other, thereby pressing the mouth-parts against the surface of the leaf. This peculiarity seems to belong to all Notodontous caterpillars, although to none in so great a degree as to the genera named.

Finally I will again repeat what Staudinger* relates of a species from the Amur district, *Smeriuthus dissimilis* Brem., which goes to prove that not only larvæ, but also pupæ can produce sound. "The caterpillar, like the pupa of this species, makes, on being disturbed, a tolerably loud sound. Graeser calls the same whistling; that which I have heard from pupæ I might call rattling. The peculiar pupa, which is somewhat flattened on the ventral side and rough all over, has, at the extremity of the three middle segments of the body short, strong indentations and can, like the *Kentrochrysalis streckeri* Staud., move onwards with tolerable celerity."

That all the sound-productions mentioned here are a means of intimidation at the disposal of the larvæ, there can scarcely exist any doubt.

* Mémoires sur les Lépidoptères. N. M. Romanoff, Tome VI, 1892, p. 232, Pl. IV, fig. 3.